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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,906	10/31/2003	Robert O. Conn	X-1416-2 US	3002

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EXAMINER	
TRAN, THANH Y	

ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/698,906	Applicant(s) CONN, ROBERT O.	
	Examiner Thanh Y. Tran	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-17* is/are allowed.

6)☒ Claim(s) *18* is/are rejected.

7)☒ Claim(s) *19 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/30/04 & 10/31/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's election with traverse of Species IV (claims 1-20) filed 04/04/05 has been fully considered and is persuasive. The previous election/restrictions requirement is hereby withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beilin et al (U.S. 5,854,534) in view of Berlin et al (U.S. 6,104,082).

As to claim 18, Beilin et al discloses in figures 2C-2E and 3 an assembly, comprising: an integrated circuit die ("IC chip" 20) an output driver ("interconnects" 280), the output driver ("interconnects" 280) exhibiting an output impedance, an integrated circuit package (comprising elements 20, 50) containing the integrated circuit die ("IC chip" 20); a conductor ("bonding pad" 341) disposed outside the integrated circuit package (comprising elements 20, 50), the conductor ("bonding pad" 341) exhibiting a characteristic impedance; and means ("flexible connector" 50) for inserting an impedance into a signal path between the output driver ("interconnects" 280) and the conductor ("bonding pad" 341), the means ("flexible connector" 50) being physically attached to the integrated circuit die ("IC chip" 20) by the output driver ("interconnects" 280) of the integrated circuit die ("IC chip" 20) (see col. 3, line 64 – col. 4, line 25; and col. 6, lines 32-52).

Beilin et al does not disclose an integrated circuit die having a micro-bump; and a means including a micro-bump that physically attaches the means to the integrated circuit package.

Berlin et al discloses in figure 2b an integrated circuit die ("chip 1") having a micro-bump (comprising element 62a); and a means ("interposer" 60') including a micro-bump (62) that physically attaches the means ("interposer" 60') to the integrated circuit package (comprising chips 1-5 and 60'). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the assembly of Beilin et al by having an integrated circuit die which has a micro-bump; and a means including a micro-bump that physically attaches the means to the integrated circuit package as taught by Berlin et al for electrically interconnect between the chip (die) and the interposer within the integrated circuit package (see col. 5, lines 23-40 in Berlin et al).

Allowable Subject Matter

3. Claims 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. Claims 1-17 are allowed.

5. The following is an examiner's statement of reasons for allowance:

The prior of record fails to disclose *an assembly comprising: a printed circuit board comprising a conductor having a characteristic impedance; an integrated circuit die having an output driver which has an output impedance; the output impedance of the output driver plus the intervening impedance of the signal path substantially equals the characteristic impedance of the*

conductor of the printed circuit board; and in combination with other claimed features as recited in independent claim 1, claims 2-14 are depended on claim 1.

The prior of record fails to disclose *a method of impedance matching an output driver of an integrated circuit die to a printed circuit board conductor, comprising: a printed circuit board conductor exhibiting a characteristic impedance; the integrated circuit die having an output driver which exhibits an output impedance; the output impedance plus the intervening impedance is substantially equal to the characteristic impedance*; and in combination with other claimed features as recited in independent claim 15, claims 16-17 are depended on claim 15.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ho et al (U.S. 6,699,046) discloses pin grid array integrated circuit connecting device.

Sathe (U.S 2003/0001287) flexible tape electronics packaging.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (571) 272-2110. The examiner can normally be reached on M-F (9-6:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TYT

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